Attorney Docket No.: 88413.000003 PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re the application of: Yeh, Thomas I., et al.	Confirmation No.: 9524
US Application No.: 10/005,043	Examiner: J. Chang
Filed: December 4, 2001	Group Art Unit: 2154

For: INTERFACE FOR REMOTE MONITORING AND CONTROL OF INDUSTRIAL MACHINES

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June 8, 2007

APPEAL BRIEF

Appellant hereby appeals to the Board of Patent Appeals and Interferences from the Examiner's final rejection of claims as set forth in the Office Action mailed September 8, 2006.

A timely Notice of Appeal was filed on March 8, 2007, and a Petition for Extension of Time under 37 CFR 1.136(a) to extend the due date for filing the Appeal Brief one month up to and including June 8, 2007, is being submitted concurrently herewith.

Real Party-in-Interest

Connected Energy Corp. is the real party-in-interest in this proceeding.

Related Appeals and Interferences

No appeals or interferences are known which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

Status of the Claims

Claims 1 through 14 are pending in the application. All of the claims have been twice rejected, and are being appealed herein. Appendix 1 provides a clean, double-spaced copy of the claims on appeal.

Status of Amendments

No amendments were filed in this application subsequent to the most-recently mailed Office Action.

Summary of Claimed Subject Matter

The present invention relates generally to a programmable interface apparatus for connecting one of a plurality of industrial machines and a method of connecting one of a plurality of industrial machines.

According to one embodiment of the invention, independent claim 1 recites a programmable interface apparatus for connecting one of a plurality of industrial machines having different data format and storage configurations and different electrical interface characteristics to a communications medium for remote monitoring and control. The apparatus includes a memory, a configurable electrical interface, a configurable data translator, a processor, and a communications port. The memory stores data in predetermined locations and in a predetermined format, and stores both

electrical interface configuration information and data translation configuration information relating to the at least one of the industrial machines. The configurable electrical interface is adapted to be directly connected to one of the industrial machines and responsive to the configuration information for configuring the electrical interface characteristics of the electrical interface in response to the stored electrical interface configuration information relating to at least one of the plurality of industrial machines for receiving machine data from the industrial machine and sending data to the industrial machine. The configurable data translator is responsive to the stored data translation configuration information, receives data from the interface and transforms the data to the predetermined format. The processor is responsive to the configuration information for reading data from and writing data to the predetermined locations in the memory. The communications port is connected to the communications medium.

According to another embodiment of the invention, independent Claim 8 recites a method of connecting one of a plurality of industrial machines having different data format and storage configurations and different electrical interface characteristics to a communications medium for remote monitoring and control. The method includes storing data in predetermined locations and in a predetermined format, and storing in a memory both electrical interface configuration information and data translation configuration information relating to the at least one of the industrial machines. The method also includes configuring an electrical interface for direct connection to at least one of the industrial machines in response to the stored electrical interface configuration information and directly connecting the interface to the machine. In a receiving and sending step, the machine data is received from the industrial machine and data is sent to the industrial machine through the configurable

directly connectable electrical interface responsive to the configuration information. In another step of the method, a data translator is configured in response to the stored data translation configuration information for receiving data from the interface and the data is transformed to the predetermined format the data translator responsive to the data translation configuration information. Another step includes reading data from and writing data to the predetermined locations in the memory with a processor responsive to the data translation configuration information. Yet another step includes connecting a communications port to the communications medium.

Grounds of Rejection to be Reviewed on Appeal

1. Whether claims 1, 2, 4, 6-9, 11, 13, and 14 are unpatentable over U.S. Patent No. 6,131,125 (hereinafter "Rostoker") in view of U.S. Patent Application Publication No. 2002/0112084 (hereinafter "Deen").

2. Whether claims 1-4, 7-11, and 14 are unpatentable over U.S. Patent No. 6,032,203 (hereinafter "Heidhues") in view of Deen.

3. Whether claims 3 and 10 are unpatentable over Rostoker in view of Deen and further in view of U.S. Patent No. 5,729,204 (hereinafter "Fackler").

4. Whether claims 5 and 12 are unpatentable over Rostoker in view of Deen and further in view of U.S. Patent No. 6,088,624 (hereinafter "Khan").

5. Whether claims 5 and 12 are unpatentable over Heidhues in view of Deen and further in view of Khan.

6. Whether claims 6 and 13 are unpatentable over Heidhues in view of U.S. Patent No. 5,963,450 (hereinafter "Dew").

Argument

The present invention relates generally to industrial machines and other capital devices that are not necessarily set up for conventional data transmissions. More specifically, the invention preferably provides electrical interfaces that are electrically configurable for accepting electrical input and output as data *as well as* required data translators for reformatting data between various known protocols or even lesser known data structures.

Figures 5 and 6, and the accompanying discussion, support the configurability both of a data translator and an electrical interface. The data translator is referenced at numeral 10 in Figure 6 and the configurable electrical interface is referenced at numeral 30 in that figure. Moreover, as can be seen in figure 5, for example, three different electrical port configurations are shown, namely RS232, RS 422, and RS485. These are well known, electrically different, port configurations. Figures 5 and 6 together show that the configurable electrical interface 30 is configured using electrical interface configuration information, to assume one of these three port configurations. Copies of the specifications for the RS232, RS422, and RS485 interfaces were submitted during prosecution, and clearly show the differences, and therefore the changes, that must be made to configurable electrical interface 30 to accommodate these three protocols.

Thus, the invention generally includes reconfiguring both an electrical interface and a data translator for communicating with at least one industrial machine based on electrical interface and data translation information about the one or more machines stored in memory. Conventional systems only deal with the reconfiguration of data, such as by supporting different data protocols. However, the claimed invention

provides an additional level of flexibility by adapting to the electrical interface requirements of the machines as well.

For example, independent claim 1 is directed to a programmable interface apparatus for connecting one of a plurality of industrial machines having different data format and storage configurations and different electrical interface characteristics to a communications medium. A memory of the apparatus stores both electrical interface configuration information and data translation configuration information relating to the at least one of the industrial machines. Moreover, the apparatus includes a configurable electrical interface adapted to be directly connected to one of the industrial machines and responsive to the configuration information for configuring the electrical interface characteristics of the electrical interface; and a configurable data translator responsive to the stored data translation configuration information, receiving data from the interface and transforming the data to the predetermined format.

Independent claim 8 recites a method of connecting one of a plurality of industrial machines having different data format and storage configurations and different electrical interface characteristics to a communications medium for remote monitoring and control. The method includes storing, electrical interface configuration, and data translation configuration steps generally corresponding to the memory, configurable electrical interface and configurable data translator of claim 1, respectively.

The references are entirely silent about reconfiguring the underlying electrical interfaces. Machine-dictated hardware provides the electrical interfaces as usual and the applied references accommodate the different data structures that result.

First Ground of Rejection - Claims 1, 2, 4, 6-9, 11, 13, and 14

Claims 1, 2, 4, 6-9, 11, 13, and 14 stand rejected under 35 USC § 103 as unpatentable over Rostoker in view of Deen.

Rostoker relates to a plug-and-play data cable with protocol translation. The cable generally includes a first connector having a first plurality of pins, a second connector having a second plurality of pins and an electrical cable coupling the first connector to the second connector.

The Office Action concedes that "Rostoker does not specifically disclose storing both electrical interface configuration information and data translation configuration information," which is a feature of independent claims 1 and 8. In fact, the Office Action fails to even discuss storing electrical interface configuration information when it applies Rostoker to the independent claims. *See* 08 September 2006 Office Action, page 2, paragraph 5(a).

Moreover, Appellant submits that Rostoker fails to teach or suggest a configurable electrical interface responsive to the configuration information for configuring the electrical interface (claim 1) and configuring an electrical interface in response to the stored electrical interface configuration information (claim 8).[1]

The Examiner cites col. 2, lines 18-36 and col. 3, lines 34-54 for citing such features, along with Figs. 1C and 3B, of Rostoker for teaching these features. The passage in col. 2 and Fig. 1C refer to a prior art "smart cable", which is not a part of

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[1] Notably, the Office Action fails to recite that Rostoker teaches electrical interface configuration information, yet goes on to indicate that Rostoker teaches using such information (although not disclosed or suggested) to configure an electrical interface. Appellant respectfully suggests that the Examiner has failed to provide detailed reasoning for this seemingly inconsistent position.

Rostoker's inventive embodiments and is not a part of the methods or apparatus of Rostoker cited against other elements of the rejected claims. Since by Rostoker's own determination that such "smart cables" do not meet Rostoker's requirements for "plug-and-play" and transparency, the "smart cables" cannot be considered an inherent part of Rostoker's proposed methods or structures.

However that may be, the disclosure of a "smart cable" also does not meet the configurable electrical interface or step of configuring an electrical interface featured in claims 1 and 8, respectively . The "smart cable" only acts as translator between two electrical interfaces associated with different communication protocols. One example features the "smart cable" connecting personal computer having a USB card and a printer having a parallel or Centronics card. The use of the "smart cable" has no effect on the electrical configuration of either card. The two separate cards are still required and the cable merely translates the data between them based on their associated data protocols.

The present invention features configuring the electrical interface characteristics of the electrical interface in response to the stored electrical interface configuration information. Rostoker fails to teach or suggest such stored electrical interface configuration information. (Even the September 8, 2006, Office Action makes no indication that Rostoker discloses or makes obvious storing such information.) Rostoker further fails to teach the reconfiguration of electrical interfaces. Rostoker simply deals with the electrical configurations of data processing devices as they find them and draws from a library of translators to reformat their data structures.

The Office Action asserts that Deen remedies the deficiencies of Rostoker by "disclos[ing] storing both electrical interface configuration information and data translation configuration information."

Deen relates to methods, systems, and computer program products for controlling devices through a network via a network translation device. In paragraphs 36 and 37 of the published application, portions relied upon by the Office Action, Deen discloses:

> [0036] Returning to FIG. 5, the serial command translation module 78 is configured to receive commands from devices, such as device 62, that are formatted in accordance with the device connectivity protocol and to translate those commands into a serial format that may be transmitted to a legacy device, such as device 42 or device 52. The serial command data module 82 includes a library of serial commands that the serial command translation module 78 uses in translating the device connectivity protocol command into an appropriate serial command for a legacy device.
>
> [0037] The cartridge 1 28 module includes two types of data: a device 1 serial configuration data module 84 and a device 1 properties/functionality data module 86. The device 1 serial configuration data module 84 includes the data that may be used to configure serial port 1 of the network translation device 20 for serial communication with the device that is connected to serial port 1. Based on the example shown in FIG. 4, device 42 is connected to serial port 1; therefore, the device 1 serial configuration data module 84 includes those data that are used to configure serial port 1 for serial communication with device 42. These data may include the baud rate and the format for arranging data bits, stop bits, and parity bits in a serial transmission.

Thus, according to Deen, information data including the baud rate and the format for arranging data bits, stop bits, and parity bits in a serial transmission is used to configure a serial port. This information is useful only for data translation—it is not electrical configuration information. Nowhere does Deen teach or suggest storing both electrical interface configuration information and data translation configuration information; a configurable electrical interface responsive to the configuration information for configuring the electrical interface (claim 1); or configuring an electrical interface in response to the stored electrical interface configuration information (claim 8).

For the foregoing reasons, Appellant submits that independent claims 1 and 8 recite features that patentably define the invention over the combination of both Rostoker and Deen, whether those patents are taken alone or in combination. Thus, the rejection of claims 1 and 8 based on the combination of Rostoker and Deen is unsustainable, and Appellant respectfully requests withdrawal of this rejection of these claims.

Claims 2, 4, 6, 7, 9, 11, 13, 14 depend from one of claims 1 and 8 are believed to be allowable at least by virtue of this dependency. Withdrawal of the rejection based on the combination of Rostoker and Deen respectfully is requested.

Second Ground of Rejection - Claims1-4, 7-11, and 14

Claims 1-4, 7-11 and 14 stand rejected under 35 USC § 103 as unpatentable over the combination of Heidhues and Deen. This rejection is essentially identical to the first ground of rejection, with Heidhues replacing Rostoker.

Heidhues deals with motor control center applications and with the problem of compatibility between different data formats, but, like Rostoker, does not provide for electrically reconfiguring electrical interfaces based on information stored about the electrical interface configuration of industrial machines. In fact, the Office Action acknowledges that Heidhues "does not specifically disclose storing both electrical interface configuration information and data translation configuration information."

Like the first ground of rejection, the Examiner fails to discuss the electrical interface configuration information as being taught or suggested by Heidhues, but then asserts that Heidhues discloses using the information to configure an electrical interface. Specifically, the Office Action cites column 4, lines 19-44 and Fig. 1 of Heidhues as disclosing these limitations. Appellant disagrees.

Heidhues describes, in the cited portions, an interface system more generally as "resolving the compatibility problem with the protocol related structures." The interface system performs the tasks of selecting and formatting data and instructions, storing data, handling alarms, operating field devices, and allowing input of parameter data. All of this relates to data translation. None of this provides for electrically reconfiguring an electrical interface.

Claims 1 and 8 as presented require both the storage of electrical configuration information and the configuring of the electrical interface in response to the stored electrical configuration information. Other claim language specifies that data translation configurations can also be stored and that a data translator is configurable in response to the stored data translation configuration information. The storage of electrical configuration and data translation configuration information and configuring the electrical interface and the data translator are two separate requirements of claims 1 and 8.

On its most fundamental level, the interface system of Heidhues provides description language objects that allow for the interpretation of raw data exchanged with devices. Heidhues's language objects allow for the representation and interpretation of meaningful data and instructions. Heidhues's dynamic configurable interface system "works with data blocks" and accommodates changes in the configuration of field devices by updating the system with new communication drivers. All of this is related to data translation. Nothing in Heidhues is drawn from memory to affect the electrical configuration of the electrical interface with connected devices. Heidhues accommodates the resulting data protocol changes associated with differing electrical interfaces but do not provide for configuring the electrical interfaces themselves.

Heidhues is similarly lacking any suggestion to provide electrically reconfigurable interfaces that are configured based on stored electrical interface configuration information. At most, Heidhues, like Rostoker, teaches storing data translation information.

Deen fails to remedy these deficiencies. Deen is cited in this rejection for the same reasons as it is cited in the first grounds of rejection. For the same reasons discussed above, Deen does not teach or suggest electrical interface configuration information or configuring an electrical interface.

Specifically, Deen teaches using information data including the baud rate and the format for arranging data bits, stop bits, and parity bits in a serial transmission is used to configure a serial port. This information is useful only for data translation—it is not electrical configuration information. Nowhere does Deen teach or suggest storing both electrical interface configuration information and data translation configuration information; a configurable electrical interface responsive to the configuration information for configuring the electrical interface (claim 1); or configuring an electrical interface in response to the stored electrical interface configuration information (claim 8).

For the foregoing reasons, Appellant submits that independent claims 1 and 8 recite features that patentably define the invention over the combination of both Heidhues and Deen, whether those patents are taken alone or in combination. Thus, the rejection of claims 1 and 8 based on the combination of Heidhues and Deen is unsustainable, and Appellant respectfully requests withdrawal of this rejection of these claims.

Claims 2-4, 7, 9-11, and 14 depend from one of claims 1 and 8 are allowable at least by virtue of this dependency. Withdrawal of the rejection based on the combination of Heidhues and Deen respectfully is requested.

Third, Fourth, Fifth, and Sixth Grounds of Rejection - Claims 3, 5, 6, 10, 12, and 15

Claims 3 and 10 stand rejected as unpatentable over the combination of Rostoker and Fackler, claims 5 and 12 stand rejected as unpatentable over the combination of Rostoker and Khan and the combination of Heidues and Khan, and claims 6 and 13 stand rejected as unpatentable over the combination of Heidhues and Dew.

Fackler, Khan and Dew are cited only for teaching features of these dependent claims. Those patents do nothing to remedy the deficiencies of the rejections discussed above.

With respect to the base claims 1 and 8, neither Fackler et al. nor Khan et al. can be relied upon for modifying Rostoker et al. to store electrical interface configuration information about industrial machines or to configure electrical interfaces to the machines based on the stored interface configuration information. Fackler et al. disclose a smart cable over which Rostoker et al. was intended as an improvement. Khan et al. do not disclose configurable interfaces.

Thus, none of these secondary references teaches providing a configurable electrical interface and storing electrical interface configuration information. Consequently, none of the secondary references, in combination with the primary references, provide even the basic teachings of Applicant's invention.

Khan et al.'s deficiencies in combination with Heidhues are the similar to those in combination with Rostoker et al. Dew provides for controlling welding equipment by

providing a common database management system. Dew's PC does not process configuration information for electrically configuring machine interfaces.

Thus, as discussed in more detail above, claims 1 and 8 are patentable over all art of record and each of the dependent claims also is patentable, at least by virtue of this dependency.

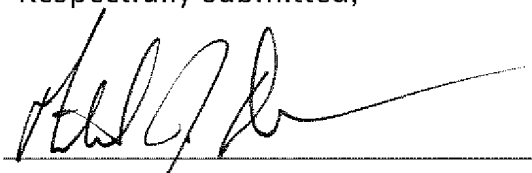
Summary

The cited patent documents, whether taken alone or in proper combination,] fails to teach all of the limitations of Appellant's independent claims 1 and 8.

Conclusion

For the foregoing reasons, Appellant respectfully requests that the Board of Patent Appeals and Interferences reverse the Examiner's rejections and mandate allowance of the claims.

Respectfully submitted,



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APPENDIX I - CLAIMS ON APPEAL

1. A programmable interface apparatus for connecting one of a plurality of industrial machines having different data format and storage configurations and different electrical interface characteristics to a communications medium for remote monitoring and control comprising:

(a) a memory for storing data in predetermined locations and in a predetermined format, and for storing both electrical interface configuration information and data translation configuration information relating to the at least one of the industrial machines;

(b) a configurable electrical interface adapted to be directly connected to one of the industrial machines and responsive to the configuration information for configuring the electrical interface characteristics of the electrical interface in response to the stored electrical interface configuration information relating to at least one of the plurality of industrial machines for receiving machine data from the industrial machine and sending data to the industrial machine;

(c) a configurable data translator responsive to the stored data translation configuration information, receiving data from the interface and transforming the data to the predetermined format;

(d) a processor responsive to the configuration information for reading data from and writing data to the predetermined locations in the memory; and

(e) a communications port connected to the communications medium.

2. The programmable interface apparatus of claim 1, in which the information relating to the industrial machine includes data transform information, and the data translator is responsive to the data transform information.

3. The programmable interface apparatus of claim 1, further comprising a display coupled to the processor for displaying the data to a user.

4. The programmable interface apparatus of claim 1, in which the memory storing configuration information is non-volatile memory.

5. The programmable interface apparatus of claim 4, in which the memory storing configuration information is removable memory.

6. The programmable interface apparatus of claim 1, further comprising a configuration processor separate from the apparatus and removably connectable to the apparatus for processing configuration information and loading the configuration information into the memory.

7. The programmable interface apparatus of claim 1, in which the configuration information comprises configuration information for a plurality of industrial machines.

8. A method of connecting one of a plurality of industrial machines having different data format and storage configurations and different electrical interface characteristics to a communications medium for remote monitoring and control, the method comprising:

(a) storing data in predetermined locations and in a predetermined format, and storing both electrical interface configuration information and data translation configuration information relating to the at least one of the industrial machines in a memory;

(b) configuring an electrical interface for direct connection to at least one of the industrial machines in response to the stored electrical interface configuration information and directly connecting the interface to the machine;

(c) receiving machine data from the industrial machine and sending data to the industrial machine through the configurable directly connectable electrical interface responsive to the configuration information;

(d) configuring a data translator in response to the stored data translation configuration information for receiving data from the interface and transforming the data to the predetermined format the data translator responsive to the data translation configuration information;

(e) reading data from and writing data to the predetermined locations in the memory with a processor responsive to the data translation configuration information; and

(f) connecting a communications port to the communications medium.

9. The method of Claim 8, further comprising including data transform information in the information relating to the industrial machine, and the data translator is responsive to the data transform information.

10. The method of claim 8, further comprising coupling a display to the processor for displaying the data to a user.

11. The method of claim 8, further comprising storing the configuration information in a non-volatile memory.

12. The method of claim 11, further comprising removing the memory storing configuration information.

13. The method of claim 8, further comprising processing both electrical interface configuration information and data translation configuration information and loading the configuration information into the memory in a configuration processor separate from the apparatus and removably connectable to the apparatus.

14. The method of claim 8, further comprising retaining both electrical interface configuration information and data translation configuration information for a plurality of industrial machines in the configuration information.

APPENDIX II - EVIDENCE

None.

APPENDIX III - RELATED PROCEEDINGS

None.